

2. PREDATION BY LEOPARD *PANTHERA PARDUS* IN MAJHATAL HARSANG WILDLIFE SANCTUARY, WESTERN HIMALAYA

We analysed leopard (*Panthera pardus*) scats to get an indication of its food habits in Majhatal Harsang Wildlife Sanctuary (MHWS: 76° 55'-77° 5' E and 31° 15'-31° 18' N), Himachal Pradesh. The scats were collected between November 1992 and May 1993. MHWS is located in the middle Himalaya, with an altitude from 575 m to 1,985 m above msl. The area has a subtropical monsoon climate. Himalayan chir pine (*Pinus roxburghii*) and ban oak (*Quercus leucotrichophora*) forests, and subtropical *Euphorbia* scrub are the major vegetation types (Champion and Seth 1968).

Besides leopard, mammalian predators in the area are jungle cat (*Felis chaus*), Himalayan black bear (*Selenarctos thibetanus*), and Himalayan yellow-throated marten (*Martes flavigula*). Lammergeier (*Gypaetus barbatus*) is a potential avian predator. The potential prey base in MHWS includes barking deer (*Muntiacus muntjac*), wild pig (*Sus scrofa*) and sambar (*Cervus unicolor*), besides goral *Nemorhaedus goral*. Goral is the most abundant, followed by barking deer. Wild pig and sambar are very rare. During this 6 months study, there were more than 300 sightings of goral, about of 10 barking deer, 1 of sambar and none of wild pig (Mishra 1993, Mishra and Johnsingh 1996). Although there are sampling biases in this information (e.g. very little sampling in the low-lying areas of the Sanctuary, which are used more by sambar and wild pig), we think that it does give a rough indication of the relative abundance of wild ungulates. Relatively large groups (>20) of rhesus macaque (*Macaca mulatta*) and common langur (*Presbytis entellus*) were seen repeatedly in the area, though we do not have any abundance estimates. Though porcupine (*Hystrix indica*) was never seen, probably because of its nocturnal habits, indirect evidence and local information indicated that it was common. Both porcupine

and rufous-tailed hare (*Lepus nigricollis ruficaudatus*) damage crops in the villages and are known to be fairly common. One hundred and six species of birds were identified during the study, including nine species of pheasants (Mishra 1997).

MHWS has 17 villages with a human population of about 750. Livestock rearing is one of the main occupations besides cultivation. The potential prey base for leopard includes livestock (goat, sheep, cattle, buffalo) and village dogs.

Forty-seven leopard scats were collected from areas between 1,400-1,950 m above msl. All scats were washed in running water, over a sieve, and oven dried at 60 °C. Of these, 17 scats were analysed at the field station, for which no standardized procedures were followed. Prey remains such as hair, claws and hooves were examined. Hairs were viewed under a compound microscope at 100x magnification and were identified by comparing them with reference slides. The remaining 30 scats were analysed using techniques standardised by Mukherjee *et al.* (1994). Twenty hairs were picked per scat and identified by the medullary method.

The results are summarised in Table 1. Cattle remains were found in 33% of the scats followed by langur (30%), goral (30% and dog (23%). Remains of buffalo, rodents, goat and hare occurred in less than 15% of the scats. Fifty percent of the scats contained the remains of a single prey species, 33% contained 2 prey species, and 17% contained 3 prey species. The mean number of species per scat was 1.6. We found remains of birds in 3 of the 17 scats analysed at the field station. Remains of buffalo, cow, goat, goral and rodents were noted in one scat each.

Although the sample size is inadequate to comment on leopard diet, some interesting trends are indicated. Remains of domestic and wild animals are represented in almost equal numbers of scats (23 and 24 respectively). This indicates

TABLE I
PERCENT OCCURRENCE OF PREY REMAINS IN
LEOPARD SCATS (10, 20 AND 30; CUMULATIVE)
FROM MAJHATAL HARSANG WILDLIFE
SANCTUARY, INDIA

| Prey species | 10 scats | 20 scats | 30 scats |
|--------------|----------|----------|----------|
| Cattle | 30 | 25 | 33 |
| Langur | 40 | 30 | 30 |
| Goral | 10 | 20 | 30 |
| Dog | 30 | 25 | 23 |
| Buffalo | 30 | 20 | 13 |
| Rodents | 10 | 10 | 10 |
| Goats | 0 | 10 | 10 |
| Hare | 0 | 0 | 3 |
| Unknown | 0 | 5 | 6 |

high predation on domestic animals, despite there being seemingly abundant wild prey, especially goral. Buffalo remains in the diet indicate scavenging by the leopard — there was high winter mortality among buffaloes during the study period. Local information confirmed that there is no actual predation on buffalo, though cattle are frequently killed.

Our results indicate relatively high predation on goral (Table 1). In another goral area, in Rajaji National Park in the Shiwalik Hills of northwest Himalaya, we had found a total absence of leopard predation on this species (Mukherjee, unpubl. data), where it was among the less abundant species and occurred in more

difficult terrain than the other prey. The majority of prey in Rajaji was formed by the more abundant chital (*Axis axis*). In MHWS, we did not find any remains of barking deer, wild pig, sambar, rhesus macaque, or porcupine, in any of the scats. Except for the last two, these species are uncommon in the study area. It is worthwhile to note the high levels of predation on common langur and a complete lack of it on rhesus macaque. The trend in Rajaji was similar, with no predation on the rhesus macaque, further data on which is yet to be published.

ACKNOWLEDGEMENTS

The second author thanks the Himachal Pradesh Forest Department for cooperation and permission to work, and Hira Singh for valuable field assistance.

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3. A REPORT ON THE FOOD PLANTS OF SÁLIM ALI'S FRUIT BAT *LATIDENS SALIMALII*

A team of researchers visited the only known roosting cave of the highly endangered and endemic bat *Latidens salimalii* Thonglongya, on March 23, 1999, as part of the biodiversity assessment programme of Meghamalai region. The cave is situated in a deep gorge in a valley,